

### **REMARKS**

In the Office Action mailed June 2, 2004, the Examiner indicated that the applicant's arguments filed on March 18, 2004 have been fully considered and were convincing in overcoming the rejections based upon the previously cited references. Thus, the rejections of record were withdrawn and a new ground of rejection is established in the present Office Action.

In the Office Action, claims 1-7, 9 and 26 were rejected under 35 USC §103(a) as being unpatentable over the Hafner U.S. Patent No. 5,333,617 in view of the Skahill U.S. Patent No. 6,121,940 in further view of the Heslen U.S. Patent No. 3,631,851. Further, the Examiner rejected claims 12, 13, 17-21, 23, 25, 27, 28 and 30 under §103(a) as being unpatentable over the Hafner '617 reference in view of the Skahill '940 reference. Thus, the independent claims 1, 12 and 27 were primarily rejected based upon the combination of the Hafner '617 reference in view of the Skahill '940 reference.

In rejecting independent claims 1, 12 and 27, the Examiner stated that the Hafner '617 reference taught a receiver that selected an antenna based upon signal strength and that the Skahill '940 reference taught the use of an impedance detector and a dynamic impedance transformer circuit for achieving broad band impedance matching for the purpose of achieving maximum power transfer.

By the present Amendment, independent claim 1, 12 and 27 have been amended to more particularly indicate that the impedance detector detects the impedance of the antenna and provides a control signal to a dynamic impedance matching circuit such that the dynamic impedance matching circuit compensates and corrects for the impedance changes and impedance mismatches. Thus, the amended independent claims 1, 12 and 27 each require an impedance detector that actively monitors the impedance of the antenna and generates a control signal that allows a dynamic impedance matching circuit to compensate for the physical impedance changes of the antenna. This feature and function is not taught or suggested, nor rendered obvious, by the combination of the references



cited by the Examiner, and specifically the combination of the Hafner '617 reference with the Skahill '940 reference.

In the Hafner '617 reference cited by the Examiner, the reference teaches an RF receiver 13 that receives signals from a transmitter 12. The transmitter 12 corresponds to the telemetry unit required by the amended independent claims 1, 12 and 27. In the Hafner '617 reference, the receiver 13 is shown in Figure 12 as including four separate antennas labeled antennas A - D. As described in the specification at column 11, lines 25-44, the receiver selects the strongest received RF signal from the choice of four different antennas.

In the Office Action, the Examiner stated that the Hafner '617 patent did not teach either an impedance detector or a dynamic impedance matching circuit, as required by the independent claims 1, 12 and 27. For this feature, the Examiner relied upon the Skahill '940 reference.

In describing the Skahill '940 reference, the Examiner suggested that the Skahill '940 reference taught a dynamic impedance transformer circuit that achieved broadband impedance matching for the purpose of achieving maximum power transfer. Applicant hereby disagrees with such interpretation of the Skahill '940 reference by the Examiner.

The Skahill '940 reference identifies the problem that as the frequency of operation of an antenna changes, the impedance of the antenna also changes and that a simple matching circuit utilizing conventional Foster reactance components no longer present the proper impedance matching. To solve this problem, the Skahill '940 reference provides a matching circuit 42 that includes a dynamic dispersive impedance transformer (DDIT) 48. The DDIT 48 includes internal operating components that allows the DDIT to match the radiation resistance of the antenna. As described in column 8, line 7, the radiation resistance 36 is frequency dependent. Thus, the DDIT 48 allows the impedance matching circuitry to receive the signal to be transmitted and automatically adjusts based on the frequency to present a substantially constant impedance over a broad range of frequencies.



As best illustrated in Figure 8 of the Skahill '940 reference, the matching circuit 42, including the DDIT 48, is positioned between the signal source 30 and the antenna 32. Thus, the impedance matching circuit 42 receives the signal to be transmitted prior to the signal being transmitted by the antenna 32. As described above, the DDIT 48 directly responds to the frequency of the signal being transmitted in an attempt to match the impedance of the antenna 32.

By the present Amendment, the independent claims 1, 12 and 27 have been specifically amended to indicate that the system includes an impedance detector that monitors the impedance of the antenna and generates a control signal to a dynamic impedance matching circuit such that the dynamic impedance matching circuit can compensate for the impedance changes of the antenna. As described in the present application, the impedance of the antenna can change depending upon where the antenna is located. As an example, the positioning of the antenna next to a bed rail or other source of antenna detuning will have an impact on the effective impedance of the antenna. The impedance matching circuit required by the independent claim 1, 12 and 27 allows the impedance detector to sense the impedance of the antenna and modify the impedance matching based upon a physical characteristic of the actual antenna itself. Clearly, this feature is not taught or suggested, nor rendered obvious by the combination of references applied by the Examiner.

As described above, the Skahill '940 patent cited by the Examiner to show an impedance matching circuit does not include any type of feedback signal or impedance detector. Instead, the Skahill '940 reference teaches simply a circuit that adjusts an impedance based solely on the frequency of the signal to be transmitted. Although the impedance matching circuitry attempts to mirror the impedance changes of the antenna due to the frequency of the signal being transmitted, there is no feedback signal as required by the independent claims. Thus, the Skahill '940 reference cannot adjust, compensate or correct for impedance changes in the antenna due to physical changes in either the properties of the antenna or the location of the antenna. Instead, the Skahill



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'940 reference teaches a circuit that responds only to the frequency of the input rather than sensing the impedance of the antenna and providing a control signal to adjust the impedance matching based on the sensed impedance.

Based on the above arguments for allowance, claims 1, 12 and 27 are believed to be in condition for allowance and such action is respectfully requested.

Claims 2-11 depend directly or indirectly from claim 1 and are thus believed to be allowable based upon the above arguments for allowance, as well as in view of the subject matter of each claim.

Claims 5 and 6 were rejected by the Examiner because it was the Examiner's view that the Hafner '617 patent taught the selection of an antenna based on signal strength. However, claim 6 clearly indicates that the telemetry unit selects between multiple antennas based on the output of the impedance detector. Since neither the Hafner '617 reference, the Skahill '940 reference or the Heslen '851 patent teach or suggest the use of an impedance detector, let alone the selection of an antenna based upon an output of an impedance detector, claim 6 is believed to include allowable subject matter.

Dependent claims 13-26 depend directly or indirectly from claim 12 and thus include all of the limitations included in claim 12. For this reason, dependent claims 13-26 are believed to be in condition for allowance.

Finally, claims 28-30 depend directly or indirectly from independent claim 27. For the reasons set forth above and in the arguments for allowance of claim 27, claims 28-30 are also believed to be in condition for allowance.

Based on the claim amendments and the above arguments for allowance, claims 1-30 are believed to be in condition for allowance and such action is respectfully requested.

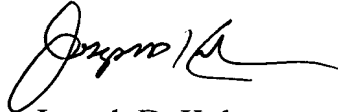


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The Examiner is invited to contact the applicant's undersigned attorney with any questions or comments, or to otherwise facilitate prosecution of the present application.

Respectfully submitted,

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A handwritten signature in black ink, appearing to read 'Joseph D. Kuborn', with a stylized flourish extending to the right.

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